



"Safety Comes First"

Case Western Reserve University Environmental Health and Safety

Sept/Oct
2021

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How does one obtain Authorized User Status for Radioactive Materials, Sealed Sources, Liquid Scintillation Counters, and/or Use of Radioactive Material in Animals?

Universities, as academic and scientific institutions, use radioactive materials for experimental research, course work, laboratory demonstrations, and other health physics applications. Sealed sources are solid materials, usually metal or plastic, which encapsulate a core of radioactive material and are used individually or within liquid scintillation counters. Radioactive substances emitting energetic particles or waves is called ionizing radiation and can be experimentally used as solid, liquid, or gas.

CWRU is authorized to use radioactive material by the state of Ohio, which became an agreement state on August 31, 1999. Radioactive material is extensively used in the several hundred biomedical research laboratories on campus. Safe use, in compliance with the complex controls and regulations governing the use of radioactivity, is the primary goal of the radiation safety program. The use of radioactive material and/or sealed sources requires licensing and approval by the CWRU Radiation Safety Office.

Faculty members who intend to use radioactive material, sealed sources, liquid scintillation counters, and/or radioactive material in animals must discuss his or her intent with either the radiation safety officer (RSO) or the assistant radiation safety officer (ARSO). One of these officers must review the application in more detail prior to completion of the paperwork. You may contact the radiation safety office (RSOF) at 216-368-2906 to schedule an appointment. An application for non-human use of radioactive materials must be completed, reviewed, and approved by the radiation safety committee (RSC) before radioactive materials may be purchased or used. The completed application is to be returned to the RSOF no later than the first Wednesday of the month.

Felice T. Porter

Assistant Director of Radiation Safety, CWRU

Electrocutions



“An arc flash happens when electricity travels through the air from one conducting surface to another, or to the ground.”

In the December/January, 2021 EHS Newsletter, we looked at OSHA’s “Fatal Four”—falls, caught-in or between, struck-by object and electrocution hazards. In this issue, we focus more on electrocutions. According to the Occupational Safety and Health Administration (OSHA), in 2017, there were 71 electrocution deaths and many more injuries from burns and electrical shocks.

Hazards. Here, we take a look at some of the major electrical hazards you may be exposed to on a construction jobsite and how to stay safe.

- **Contact with overhead or buried power lines.** Always assume that power lines are energized, and never touch one—the covering on overhead power lines protects them from adverse weather, but it will not protect you if you touch it. Working on a ladder or an aerial lift in the vicinity puts you at risk because even if you are not touching the line directly, you can still be electrocuted. Be careful not to let equipment approach a power line too closely.
- **Improper use of extension cords.** When used incorrectly, or when extension cords have damaged wiring and/or loose connections, they can cause fires, shocks, and burns and can damage equipment. Don’t use extension cords as a replacement for permanent wiring; they are designed for temporary use. Inspect cords before each use to be sure they’re in good condition and are not frayed, cracked, or punctured. When in use, check if the cord is hot to the touch; if so, it’s overloaded and should be disconnected. Using one long cord instead of several shorter cords connected together can avoid overheating and a potential fire.
- **Exposure to energized equipment (arc flash/blast).** An arc flash happens when electricity travels through the air from one conducting surface to another or to the ground. This can happen when circuit breakers and disconnects are opened and closed, when exposed electrical equipment is touched with a tool, or when equipment fails. If the air is rapidly heated, a powerful blast can be created. The most effective way to prevent an arc flash from energized electrical equipment is to create what is known as an “electrically safe work condition.” That means de-energize or disconnect and lock out/tag out the power source before starting any maintenance or repair work.

Injuries. Electrical hazards pose the risk of the following types of injuries:

- **Burns** are a common injury due to electrical hazards. Electric burns occur when current flows through tissue or bone, generating heat that causes damage. These can be severe and often require immediate medical attention. There are also arc flash burns from the intense heat generated from an arc flash and thermal contact burns caused by touching equipment or wiring that is too hot.
- **Shock** is the body’s reflex response from current passing through it when it becomes part of the electrical circuit. The severity of a shock depends on the path the current takes through the body, the magnitude of the current, the length of time of the exposure, and whether the skin is wet or dry (current flows easier through wet skin).
- **Electrocution** occurs when the body is delivered a fatal amount of current.

The GHS Flammable Hazard Pictogram

If your job requires you to work with various chemicals on a regular basis, you should note that containers of hazardous chemicals at your facility are all labeled in the same way and contain the same categories of information. You should take the time to read the labels on the chemicals in your work area and become familiar with the format and the types of information on the labels. On each of these labels, you will see one or more pictograms. These are the red diamonds with the black pictures on a white background.

What are pictograms?

Pictograms are meant to help you quickly identify the hazards associated with a chemical. There are nine different pictograms that represent different hazards. The “Flammable” pictogram, is a red diamond, and inside the diamond is a silhouette of a flame.

What does the “Flammable” pictogram mean?

If you see this pictogram on a chemical label, it means that the substance is flammable or explosive. It appears on labels of substances that are:

- Flammables—which are gases, aerosols, liquids, or solids that will burn or ignite under certain conditions,
- Self-Reactives—heating alone, without air, may cause fire or explosion,
- Pyrophorics—in small amounts, may ignite within 5 minutes after contact with air,
- Self-Heating—which may catch fire only in large amounts and after long periods of time when exposed to air,
- Emitters of flammable gas, *and*
- Organic peroxides—which, when heated, may cause fire or explosion; may be sensitive to impact or friction; and may react dangerously with other chemicals.

These are all potentially very serious hazards, so when you see this pictogram, be cautious and do things the right way, which includes following the Precautionary Statements on the label.

Where can you find specific information?

More specific information on the hazards of a chemical is listed in the Hazard Statement on the label and in the safety data sheet, or SDS, for the chemical. The SDS will also give you information on what personal protective equipment to use and what to do if you or a coworker are exposed to the chemical. You know that there are hazardous chemicals at your facility, but if you understand and use the information available, you can minimize your risk.

Source: Safety BLR



“Pictograms are meant to help you quickly identify the hazards associated with a chemical.”

Salmonella Outbreak Linked to Italian-Style Meats



“Ill people reported eating Fratelli Beretta brand Uncured Antipasto trays before they got sick.”

Fratelli Beretta brand prepackaged Uncured Antipasto trays

- Sold in a variety of grocery stores and other food markets nationwide
- Sold in vacuum-sealed plastic packages
- Can include uncured salami, prosciutto, coppa, or soppressata
- With “best by” dates on or before February 11, 2022
- This does not include Italian-style meats sliced at a deli

Ill people reported eating Fratelli Beretta brand Uncured Antipasto trays before they got sick. The investigation is ongoing to determine if additional Fratelli Beretta products are linked to illness. On August 27, 2021, Fratelli Beretta issued a [recall](#) of one of their uncured antipasto products; however, CDC continues to advise people to not eat any:

- Fratelli Beretta brand Uncured Antipasto trays with “best by” dates on or before February 11, 2022,
- Recalled Fratelli Beretta brand prepackaged Uncured Antipasto trays, or
- Fratelli Beretta Uncured Antipasto prosciutto, soppressata, Milano salami & coppa 24-oz trays containing two 12-oz packages with “best by” dates on or before February 11, 2022 (UPC code 073541305316).

Products have the establishment number “EST. 7543B” inside the U.S. Department of Agriculture’s mark of inspection.

What Everyone Should Do

Do not eat the recalled products or any other Fratelli Brand Uncured Antipasto trays with “best by” dates on or before February 11, 2022. Throw them away, even if some of them were eaten and no one got sick.

- If you don’t know the brand of prepackaged Italian-style meats you have at home, don’t eat them and throw them away.
- **Wash items, containers, and surfaces** that may have touched the products using hot soapy water or a dishwasher.
- **Call your healthcare provider** if you have any of these severe *Salmonella* symptoms:
 - Diarrhea and a fever higher than 102°F
 - Diarrhea for more than 3 days that is not improving
 - Bloody diarrhea
 - So much vomiting that you cannot keep liquids down
 - Signs of dehydration, such as:
 - Not urinating much
 - Dry mouth and throat
 - Feeling dizzy when standing up



Corrosives–Dangers of Exposure

Corrosive chemicals can burn and destroy exposed parts of the body, such as eyes and skin, as well as lungs and other internal organs, on contact.

Health Hazards of Corrosive Materials

Corrosive materials can be highly reactive, unstable substances that can seriously injure a worker if not handled in the right way. Most are either acids or bases (which include caustics or alkalis).

- Acids are often used for cleaning solutions and in manufacturing. They can destroy body tissue.
- Bases are also widely used in cleaning agents and various other products. They can cause severe burns, lung damage, and scarring.
- In addition, some oxidizers, such as fluorine and chlorine, have corrosive properties.

Ways You Can Be Exposed to Corrosives

You can be exposed to corrosives:

- **By breathing.** Even small amounts of corrosive vapors or particles can irritate and burn your nose, mouth, throat, and windpipe; larger amounts can cause severe lung damage.
- **By swallowing.** Swallowing corrosives accidentally can severely damage your mouth, throat, or stomach and, in some cases, can result in an inability to swallow or even cause death.
- **By splashes to your eyes.** A mist or even a splash of a corrosive can damage eyes. It may only cause irritation, but scarring and blindness can also happen. Bases are especially dangerous to your eyes.
- **By contact with your skin.** Corrosives that touch your skin can produce irritation such as burns or blisters. Corrosives can sometimes even eat through the skin itself.

Corrosives are also highly reactive chemicals that can cause fire or explosion or react violently if they come in contact with other chemicals, combustible materials, or even water.

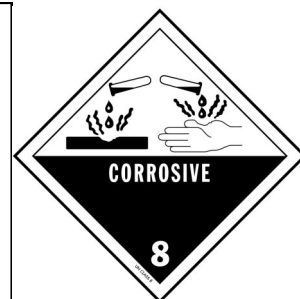
- Acids react with many metals to release hydrogen, a highly flammable gas that can ignite in air.
- Bases are not flammable, but intense heat develops when a solid base is dissolved in water, sometimes causing boiling and spattering over a wide area.

Review The Chemical's Label and SDS

Review the corrosive substance's safety data sheet (SDS) as well as the label on the chemical's container, before you work with a particular chemical. These valuable sources of information will tell you:

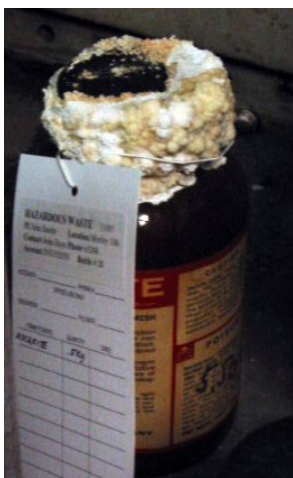
- The hazards of the chemical you are using, including the risk of fire or explosion;
- The particular type of personal protective equipment (PPE) that you need for the corrosive substance you're working with;
- The first-aid instructions in case you or a coworker is exposed to the corrosive; *and*
- What you should do if there's a spill or other emergency.

Source: Safety BLR



“...some oxidizers, such as fluorine and chlorine, have corrosive properties.”

Handling and Storage of Reactive Chemicals



*“...some-
times
violent
reactions
when
they
contact
air or
water.”*

Reactive chemicals can be involved in chemical reactions, resulting in a broad range of undesirable outcomes, including:

- The release of gases that cause irritation, dizziness, vomiting, or asphyxiation;
- The release of toxic, corrosive, or flammable gases;
- A fire or an explosion; *or*
- The generation of heat that can accelerate the reaction or cause other reactions.

When you think of chemical reactions, you most often think of two or more chemicals reacting with one another, but certain chemicals have adverse, sometimes violent reactions when they contact air or water. Chemicals can also be self-reactive. The best way to learn about the hazards of a reactive chemical and what it might react with is to read the safety data sheet (SDS) for each chemical you use before you use it.

In the SDS, you will also find what type of personal protective equipment (PPE) is necessary when working with the chemical. If you are working with a reactive chemical, it's likely that you will need chemical-resistant gloves and boots, splash goggles, a full-face shield, and possibly chemical-resistant or fire-retardant clothing.

All containers of reactive chemicals must be in good condition, properly labeled, and appropriately stored and handled. Safe practices for storing and handling reactive chemicals include:

- Storing, handling, and using the chemicals in well-ventilated areas and away from incompatible materials.
- Storing the chemical in a cool and dry area, free of ignition sources, and within the recommended temperature ranges.
- Storing smaller containers at a convenient height to reduce the risk of their being dropped.
- Preventing containers of friction-sensitive or shock-sensitive chemicals from sliding or being impacted.
- Keeping containers closed when not in use, only dispensing the chemical into compatible containers, and never returning unused chemicals to the original container.

Handling and Storage of Reactive Chemicals, Cont.

- Never keeping a chemical for longer than the chemical supplier recommends.
- Ensuring that unused waste chemicals are properly handled and disposed of as a reactive hazardous waste and never disposed of in the sink or poured down a drain.
- Practicing good housekeeping—for example, ensuring that combustible wastes are promptly removed from any area where a reactive chemical is used or stored.
- Using proper spill containment—Small containers should be stored in a tray made of compatible material, and for bigger containers, the storage area should be diked or otherwise contained.

All storage areas should have appropriate signs and be equipped with appropriate firefighting and spill cleanup equipment. Only properly trained and authorized personnel are allowed in the storage areas.

Whenever you are working with or around reactive chemicals or in an area where they are stored, always be on the lookout for leaks or signs of a



Texas Tech Explosion

reaction, such as smoke, fumes, bubbles, or unusual odors. If you see any of these signs of reactivity, immediately notify others in the area, and evacuate to a safe distance. Once out of the area, notify your supervisor and appropriate emergency

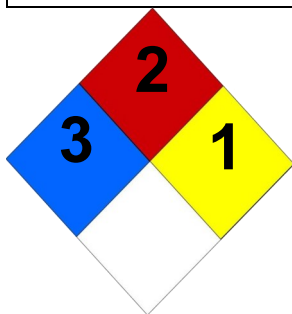
personnel. Keep others away from the area, and do not attempt to respond to the incident unless you are properly trained and authorized to do so.

Source: Safety BLR

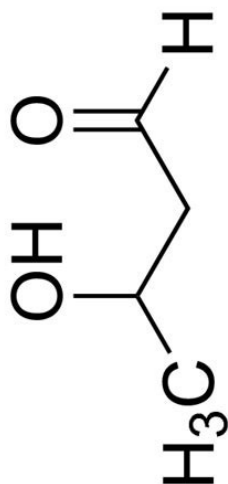
“Only properly trained and authorized personnel are allowed in the storage areas.”



Chemical Spotlight: Aldol



"Store aldol in tightly closed containers in a cool, well ventilated area."



Aldol is a thick, colorless to pale yellow liquid. It is used in making perfumes, rubber, drugs, and dyes. It is also used as a solvent.

Aldol reacts violently with oxidizing agents, such as peroxides, chlorine, and bromine. It also reacts with metals to form flammable and explosive hydrogen gas. Store aldol in tightly closed containers in a cool, well ventilated area. Avoid all sources of ignition where aldol is used, handled, or stored.

If aldol is spilled or leaked, avoid breathing vapors, mist, or gas, and ensure adequate ventilation.

Remove all sources of ignition, and evacuate personnel to safe areas. Use personal protective equipment (PPE), including goggles or safety glasses, gloves, flame-retardant protective clothing, and respiratory protection.

Prevent further leakage or spillage if safe to do so, and do not let the product enter drains, sewers, underground or confined spaces, groundwater, or waterways or discharge into the environment.

Contain the spillage, and then absorb it with vermiculite, dry sand, or earth. Place the spillage in a sealed container for disposal according to federal and local regulations.



Fun Page

Across

1. Store, handle, and use chemicals in well-ventilated areas and away from materials.
7. Severe Symptoms of _____ include diarrhea and a fever higher than 102°F.

Down

2. Aldol reacts violently with _____ agents.
3. Always assume that power lines are _____, and never touch one.
4. Pictograms are meant to help you quickly identify the hazards associated with a _____.
5. _____ material is extensively used in the several hundred biomedical research laboratories on campus.
6. _____ materials (acids and bases) can be highly reactive, unstable substances that can seriously burn a worker.

EclipseCrossword.com

F
U
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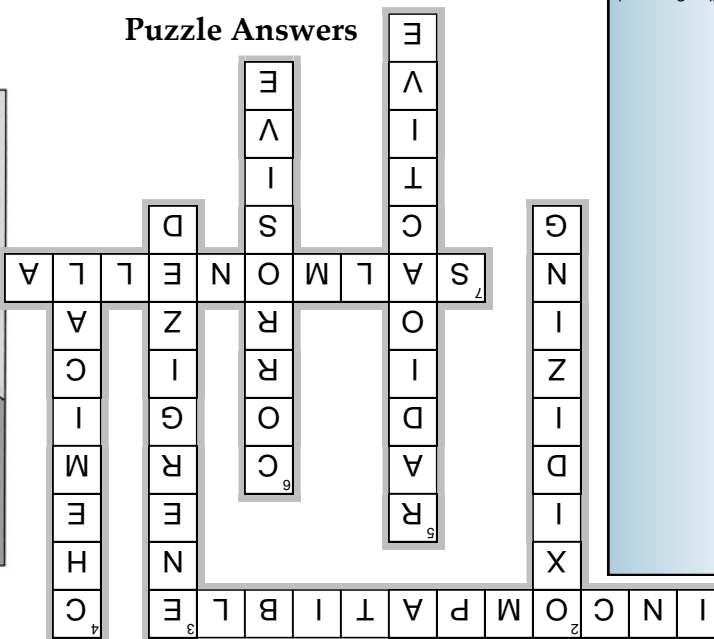
P
A
G
E

Funny Corner



How Ben Franklin got famous and brother Eli got electrocuted.

Puzzle Answers



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Safety Quotes

*Guard
himself as
he may,
every
moment's
an
ambush.*

~Horace

All back issues of the EHS Newsletter can be found online at
case.edu/ehs. Click on the "Newsletter" link at the bottom of each page.

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